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The Wartime

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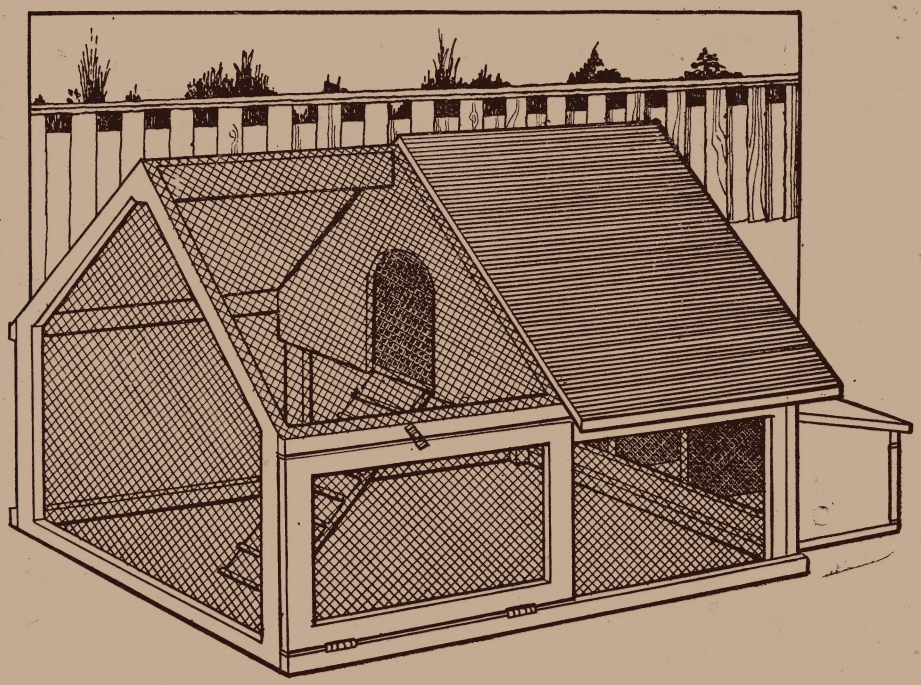

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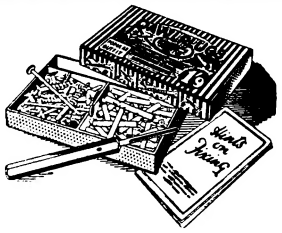

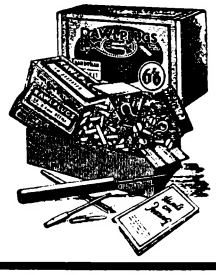

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WOODWORKER

VOL. 48 FEBRUARY, 1944 No. 603

Patterns in Veneers

A reader has sent us a sketch of a pattern of a top he proposes to veneer, and asks advice as to the best method to adopt. It forms a typical built-up design in veneer and, as it is a process which will interest most readers, we give this special article on the subject.

IN built-up work of this kind the system must be elastic, to be varied in accordance with the details of the design. There is also the element of personal preference, some men preferring one way, and others another. The design in Fig. 1 is fairly typical, however, and the method described is one which the writer has followed successfully for many years.

The Design.—Prepare a perfectly flat board slightly larger than the finished size of the panel, and fix to it a sheet of cartridge paper by gluing around the edge. If the paper is damped first it will dry out flat and taut. Upon it set out the design carefully. Put in the centre lines, but you need only draw one of the curved edges of the inner diamond shape as in Fig. 2. You will note from Fig. 1 that there is a boxwood line following the shape, but you can ignore this for the moment, making your drawing follow the inner line.

A template of one of the inner quarters is now required. Make a careful tracing and transfer it to a piece of thin hardwood or ply wood. The straight edges can be

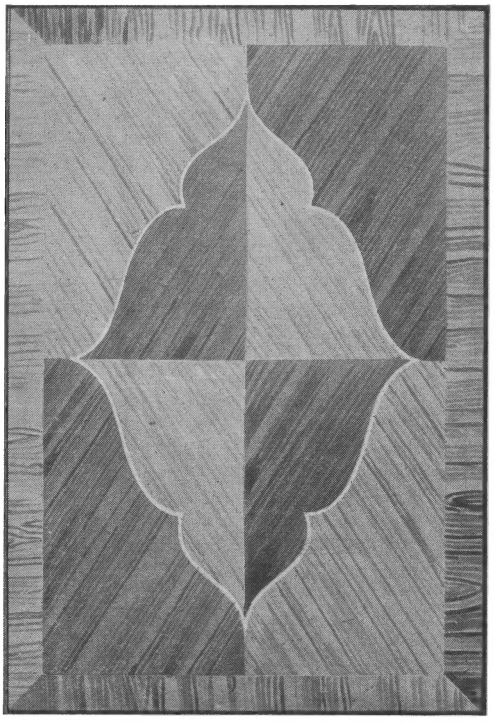
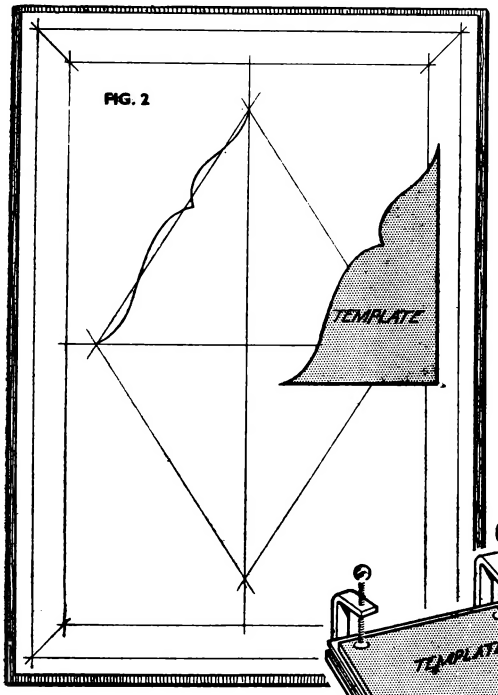


FIG. 1. DESIGN MADE UP OF REVERSED QUARTERINGS AND CROSS-BANDING.

Suitable for a table top or for a door panel. Both sides should be veneered.



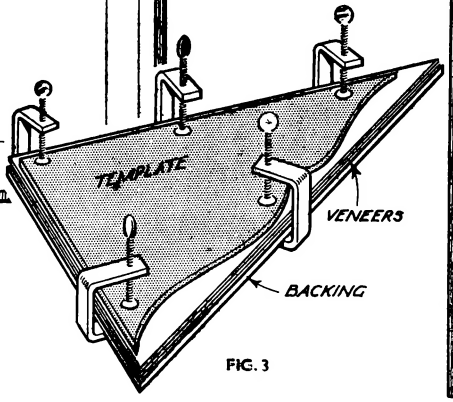


FIG. 3

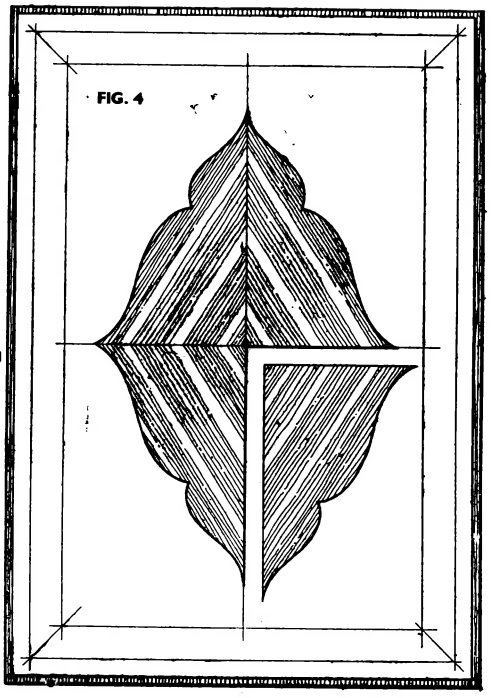


FIG. 2. PRELIMINARY DRAWING AND TEMPLATE.

FIG. 3. HOW VENEERS ARE SAWN FROM TEMPLATE.

FIG. 4. FITTING THE CENTRE QUARTERINGS.

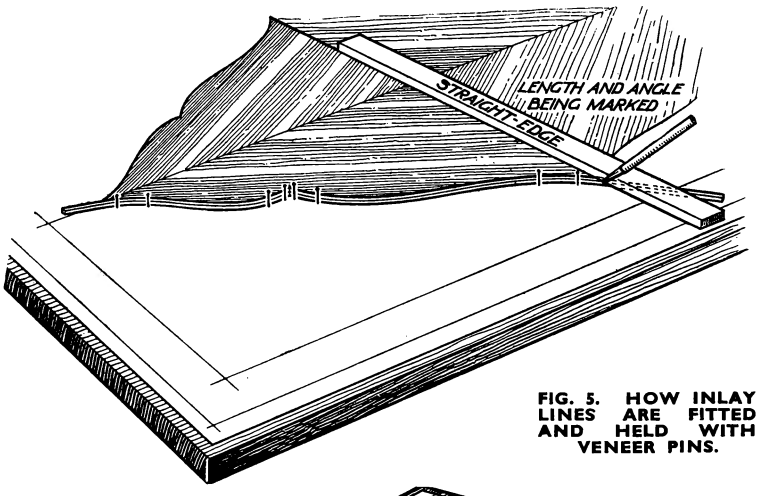


FIG. 5. HOW INLAY LINES ARE FITTED AND HELD WITH VENEER PINS.

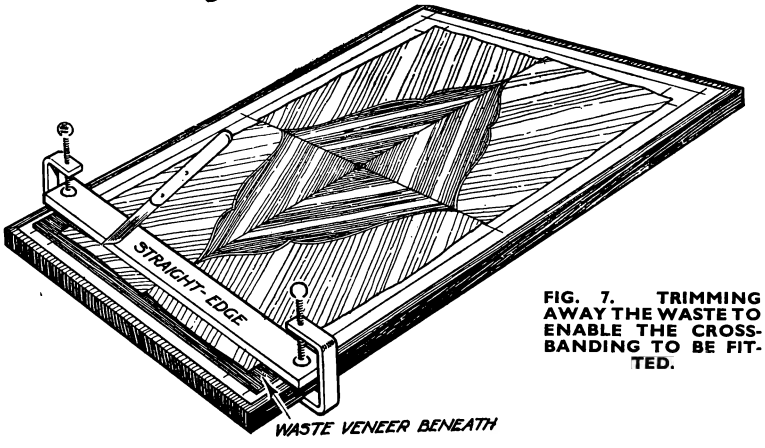


FIG. 7. TRIMMING AWAY THE WASTE TO ENABLE THE CROSS-BANDING TO BE FITTED.

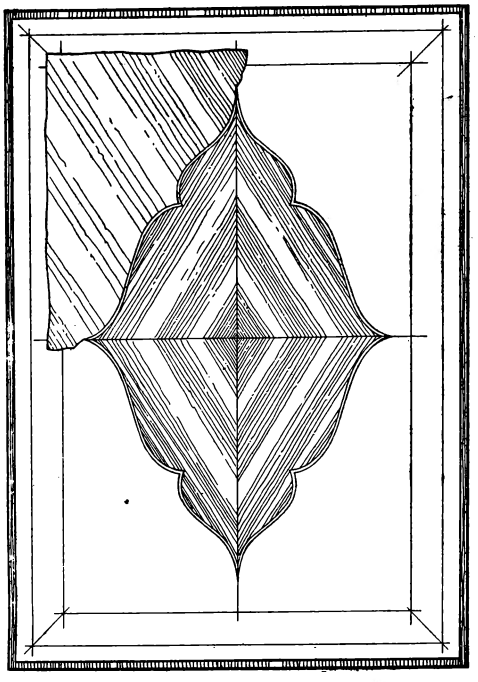


FIG. 6. FITTING THE OUTER QUARTERS.

planed true on the shooting board, but the curved one needs sawing with a fretsaw and careful trimming with the file. The completed template is shown in Fig. 2.

Inner Quarters.—Four pieces of veneer have to be cut to this exact shape, and it is obviously important that the grain runs at the same angle throughout and matches as closely as possible. If you can use four consecutive leaves from a bundle, so much the better, but if it is plain and straight-grained this is not essential. Cut out four triangular-shaped pieces large enough to include the design with about $\frac{1}{8}$ in. to spare along the edge to be shaped. Keep the grain parallel with this long edge. Also cut a backing piece in $\frac{1}{16}$ in. plywood or even in a waste piece of thick veneer.

Fix them all together in the form of a pack, template on top, backing piece at bottom, and the four veneers between as in Fig. 3. With the fretsaw cut the curved edge, following the line of the template and finishing off with the file. You can remove the thumbscrews one at a time as required, replacing them as you go. Follow by trimming the straight edges on the shooting board, again removing and replacing the thumbscrews as the necessity arises.

Assembling.—The four veneers can now be assembled on the design. Even with the utmost care it is unlikely that they will fit together perfectly. If there is an appreciable gap it is advisable to take a single shaving from all four veneers rather than several shavings from one. When in order fix one piece down with glue put around the edges. Put a couple of weights to prevent movement and add the next piece, and so on until all are in position. Fig. 4 shows the process.

Inlaid Line.—Should you decide not to include the inlaid line around the curved edges the fitting of the outer corners can now follow. If they are to be included this is the next job. As the curve is fairly flat the boxwood line should bend without difficulty. For more acute curves the lines would have to be steamed or soaked in boiling water. In this case they would be fitted, bent to shape, and held there until dry. They could then be glued.

Cut one mitre so that it halves the over-all angle, and hold in position with one or two veneer pins driven in against it. Bend round to the complete shape and mark the length as in Fig. 5. Cut with the chisel and glue in position, knocking the nails a trifle inwards if necessary to press the line home. Proceed progressively round till all are in position.

Outer Quarterings.—The four outer corners now follow. The best way is to make a new template, fitting this up to the line (the nails are withdrawn first, of course). Leave generous allowance at the straight edges and where the pieces joint together at the points. Cut them out in the way already described, and fit them independently in position, ignoring for the time being the joints at the points. This is shown in Fig. 6.

When all four have been fitted (mark each where it goes) place one in position and mark the joints with a straight-edge held in line with the main centre lines (it is a similar idea to that in Fig. 5). Cut the joint, trimming with the plane on the shooting board, and glue it to the paper, putting the glue around the curved edges only. Once again put flat weights over the veneer where necessary to hold it down flat. Fit an adjacent corner up to it and so work round until all is completed.

Crossbanding.—If the crossbanding is fairly wide it can now be added, but in the case of a narrow one it is better to add it after the main pattern has been laid. In the latter case the ground-

(*Continued on page* 23)

The New World

IT is interesting to meet in the White Paper on Educational Reconstruction the frank acknowledgment that some form of part-time education, after a child's formal school life is ended, is necessary in order to supply the lack of that extended training which the old system of apprenticeship used to supply. What is not quite so clear is, not how they are going to do it, but how the same incentive to work is going to be acquired which the definite vocational state of apprenticeship did in itself supply. We have somehow to find a new orientation to the subject of work.

* * *

How is this to be acquired? If the answer were easily forthcoming we should have solved one of the outstanding problems of our day. Unfortunately we have learned to be lazy with our minds and with our hands, and unless some sort of stimulus is applied to set them working with something like real perseverance, no amount of part-time or continuation education will do the trick. There is an old adage that "you can take the horse to the water but you can't make him drink." He first has to be thirsty, and it is only if the schools can develop a real desire for creative work among their pupils that they can accomplish their purpose.

* * *

Creative work can be an end in itself,

"The skill of a man's hands has not developed with time."

more important than the business of money-getting. Otherwise the few independent craftsmen who are still managing to eke out an existence to-day would have thrown in their hands long ago. But for those—and they are the majority—who can only do work of this nature in their leisure time, it still remains something infinitely important. It encourages resourcefulness, develops the personality, and gives a new fillip to life. The woodworker with an itch to make beautiful things will find other avenues of interest opening out. Not content with becoming a good craftsman, he may also become a student of old furniture, even something of a connoisseur. From period furniture he may proceed to "period" history—it is extraordinary how one subject leads to another—till in his mind the men of the past live again. One of the things history will teach him is that the skill of a man's hands has not developed with time. The men who made flint weapons and tools learned to make them with a fine, workmanlike precision at which we may well marvel, and in each successive generation there is evidence in plenty of the loveliness man's hands can create. It is a particularly refreshing and encouraging thought now, when there is so much destruction. Here is something which enables men always to build anew on the ruins of the old, and in the machine age, as well as in any other age, there is scope enough and place enough for the work of a man's hands. Not the same kind of work that the flint worker did; not the same kind of work that went to the making of old illuminated books, glowing with colour and gold; nor the same kind of work which made traceried roofs to the glory of God and man. But the same kind of skill. To each age its own particular genius, in some more outstanding than others, but in all of them men with skill in their hands to show that this birthright of the human race is an indestructible thing.

* * *

There always has to be some nucleus of interest first from which a man starts. And it is everyone's own problem to find out just what that is for himself. Sometimes he stumbles upon it almost by chance: sometimes it takes some finding. But the man who likes the feel of tools in his hands does not have to look far. He is the indissoluble link between the past and the future. For, indeed, no new world can be built without him. (228)

PATTERNS IN VENEER

(*Continued from page* 22)

work would be trimmed to the exact finished size first. If this were not done any subsequent trimming might make the banding noticeably narrower in some parts. This would not show in the case of a wide banding.

Assuming that the backboard with its drawing is proportionately larger than the completed design and that the drawing is exactly central and square, the edges to which the crossbanding is fitted can be cut with the cutting gauge worked around the edge. Otherwise the straight-edge and chisel or knife must be used. In any case, it is desirable to avoid cutting through the paper on which the design is drawn, and to this end a piece of waste veneer, card, or very thin ply should be slipped between the veneer and the drawing as in Fig. 7. This is the reason why only the curved edges of the corners were glued; the waste strip of veneer could not be inserted otherwise. It will be realised that the reason why the drawing must not be cut through is that it serves to hold all the veneers together when being laid.

The crossbanding is fitted up to the edges, the corners being mitred and length joints butted. As cut the crossbandings can be placed in position and held with glue sparingly applied to the paper. The whole thing is now practically ready for laying, except that it is likely that the inlaid line will be standing proud of the general surface. These lines are generally square in section, and, assuming that it is, say, $\frac{1}{16}$ in. across, it will be thicker than the veneer (unless the latter is thick saw-cut stuff). It is essential that it is level because the veneer, being laid with a caul, the pressure must be even over the entire surface. It is therefore necessary carefully to level down the lines with a finely set block plane.

There is no special point about the laying, except that centre lines must be drawn on both the groundwork and the veneer so that the latter is centred properly. The veneer is freed from the panel by cutting the paper around the edges. It is reversed so that it is laid with the paper uppermost. The back of the groundwork should be covered with veneer of the same thickness to prevent any tendency to cast. (230)

FIREWOOD—What to Collect

IF, like many of us, you have at times to wander out to collect branches and twigs to replenish the home fire, remember that some timbers burn quickly, others slowly.

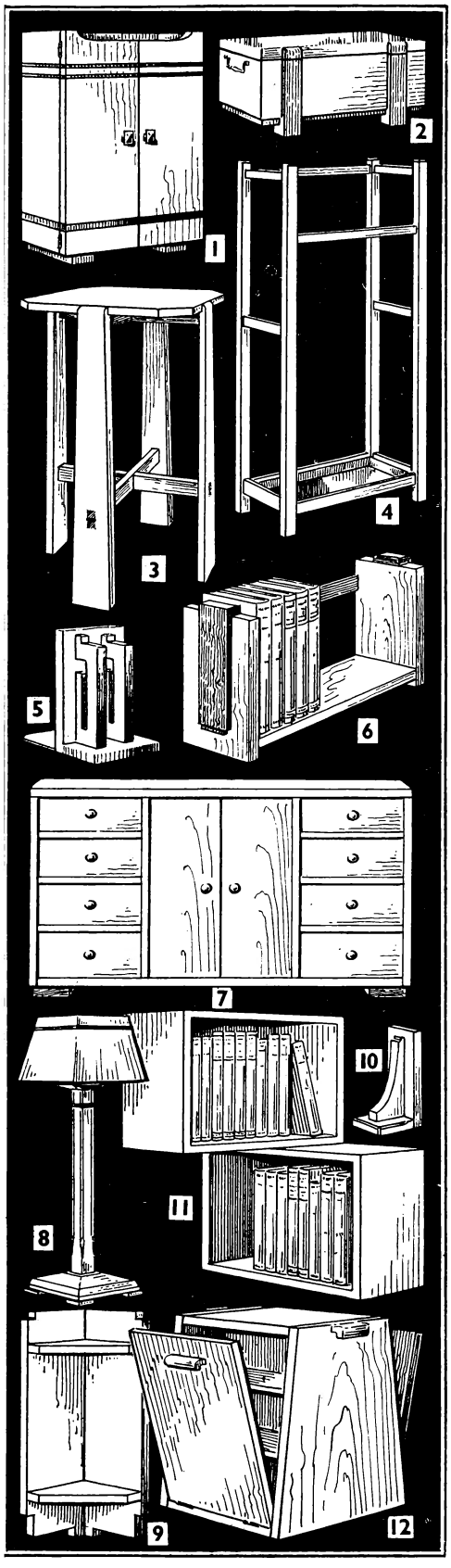
Firstly, those which ignite easily and burn quickly are Douglas fir, horse chestnut, sitka spruce, walnut, alder, elm, lime, silver spruce, poplar, western red cedar, and willow. In all these the power of resistance to fire is low.

Among those which come next for quick burning are Scots pine, larch and birch. Pine cones, when thoroughly dried, give out a strong heat and are admirable for kindling.

Woods which burn slowly, offering strong resistance to fire, are oak, ash, beech, sycamore, sweet chestnut, yew and hornbeam. As these give out splendid heat they are particularly useful in the thicker pieces. Beech and ash burn well when once alight and are excellent in conjunction with coal.

Of course, in wood-hunting one cannot usually find the particular timber that is wanted. In these days one must take what is going. Remember, too, that green wood is almost useless for emergency purposes. Discard pieces which do not readily break over the knee. Much of the wood collected will be wet, but, before a fire, those listed as easily ignited will dry in a day. Pieces of ash, beech or oak, unless obviously deadwood, should be kept for a week.

Any kind of twig up to $\frac{1}{2}$ inch in diameter will burn readily. In the case of stouter ones of an inch or more in diameter, it is well to know which are the quick and which the slow burners, (224)



YOU CAN SELECT SOMETHING FROM THIS WIDE RANGE.

All of them have been specially designed with economy of timber in mind. Many of them could be painted so that mixed woods could be used.

GIFTS

for Wedding or Birthday

Presents of every kind are an awful problem to-day. The few things still in the shops are a staggering price, and most of them are of doubtful quality. Here are some really useful things that you can make out of oddments of timber. They will be really appreciated.

STATIONERY OR SMOKER'S CABINET (Fig. 1)

SIZE, over all, is 15¾ ins. high by 12 ins. wide and 7½ ins. deep. To ends (A) the top (B) is dovetail-housed and the bottom (C) is lap-dovetailed. Note that top is fitted about ¾ in. down from top of ends. The ply back (D) may be rebated in or nailed over all. Inside shelves (E) are housed and top back rail (F) glued down. Feet (G), screwed on, are recessed ¼ in. at sides; at front they are recessed ¼ in. as from face of doors. Doors, shaped at top as indicated, are hung to open over ends.

Cutting List:	Long ft.	ins.	Wide ins.	Th'k. ins.
(A) 2 pieces	1	3	7	½
(B & C) 2 pieces	1	0	7	½
(D) Ply board	1	2	12	
(E) 2 pieces		11½	7	5/16
(F) Strip		11½	¾	½
(G) 2 feet from one piece	1	3	2 ¾ *or* 7/8	
2 doors	1	3	6¼	½

The inlaid strips (on doors and returned on ends) are optional. If introduced, the upper strips may be 3/16 in. wide and the lower one ⅜ in.

GLOVE OR HALL BRUSH BOX (Fig. 2)

SIZE 13 ins. by 6 ins. by 5¾ ins. high over feet.

The box, caddy-lid type, is first made in one complete section, the lid part (1 in. wide) being sawn off later. The sides and ends could be dovetailed for the best work, but in the size given may be rebated and glued together. Top is rebated on and glued, the bottom being rebated and screwed aslant from below.

Legs, 1¼ ins. wide on face, are cut so that their projection is ¼ in. From the detail sketch it will be seen that they raise the box ¾ in. from ground. At foot little blocks 1¼ ins. by ¾ in. are glued behind as shown to form toes which will come at 1¼ ins. square. Legs should be glued in position before the lid part is sawn off. In hingeing the top, note that the legs are neatly bevelled away so that they may not foul the hinge knuckle when the lid is opened.

Cutting List:	Long ft.	ins.	Wide ins.	Thick ins.
2 sides	1	1	5	½
2 ends		6	5	½
Top	1	1	6	⅜
Bottom	1	0¾	5¾	½
4 legs may be cut from a length	2	0	1½	½

The toe portions are thicknessed later to 1¼ ins. as in enlarged detail diagram.

MID-DAY COFFEE TABLE (Fig. 3)

THE HEIGHT may be varied as desired, but 21 ins. is here suggested. The table top is 12½ ins. square, with slightly canted corners. Construction is simple. Top rails and underframe rails are halved where they intersect and are tenoned to legs. In oak a neat and strong joint can be made by letting the tenons run right through and be wedged with pieces cut from a darker wood. In this case the tenons and wedges must be cut with special care.

Legs, tapering from 3½ ins. at floor to 2¾ ins. are rebated to fit against edges of top. Round over the top edges. Top is screwed through top rails. If thought necessary, brass repair plates may be screwed to legs under top to strengthen the joints.

Cutting List:	Long ft.	ins.	Wide ins.	Thick ins.
4 legs	1	9	3½	¾
Top	1	0½	square	⅝
2 top rails	1	1¼	1½	⅞
2 under rails	1	1¼	1¼	¾

LIGHT UMBRELLA STAND (Fig. 4.)

RAILS, shouldered, are tenoned to legs. To provide for drip pan, fillets of ½ in. stuff may be screwed to inside faces of bottom rails as shown in sectional view. Detail sizes may be taken from the scale.

LIGHT UMBRELLA STAND (*continued*)

Cutting List :

	Long ft	Long ins.	Wide ins.	Thick ins.
(A) 4 legs	2	3	1⅛ sq.	
(B) 2 rails	1	2	1¼	¾
(C) 2 rails	1	2	1½	¾
(D) 4 rails		8	1¼	¾
(E) 2 rails		8	1½	¾

PAIR BOOK ENDS

(Fig. 5)

USE ⅞ in. or ¾ in. for base, ¾ in. for upright, and ⅝ in. for the shaped buttresses. Sizes are : base, 5½ ins. by 4 ins. ; upright, 8 ins. by 5½ ins. ; buttresses, 7¾ ins. by 3 ins. Upright is glued to base and screwed with three long fine-gauge screws. Buttresses may be housed to both base and upright and glued. A scale is given for detail sizes. Base plates of thin metal (or of thin ply), projecting about 3 ins. to 4 ins., are screwed on, and to prevent the scratching of a polished surface it is usual to line the base with baize. A pair of ends will be made.

BOOKSTAND (Fig. 6)

THE bottom is housed (preferably a dovetail housing) to ends and may be glue-blocked under. The back rail is lap-dovetailed to ends. Slabs are plain except for the recessed fillet at foot. As already suggested, the return at top may be neatly effected by a simple mitre joint.

Cutting List :

	Long ft	Long ins.	Wide ins.	Th'k ins.
2 ends		9	6	⅝
Bottom	1	2½	6	⅝
Back rail	1	2½	1½	¼
2 slabs		7½	2	⅝

(In the case of the slabs, however, it is simpler to cut them from ¼ in. stuff and mitre on a strip at the top to give the effect of the overlap.)

LADY'S CABINET

(Fig. 7)

THIS piece involves more work than in the case of any other of the designs, but is well worth making for, say, a wedding gift. For needlework purposes, or for stationery and correspondence. or as a home first-aid cabinet, it makes a most useful living-room or bedroom extra.

The carcase is a box 2 ft. 2 ins. long by 13¼ ins. high and 11 ins. deep (inclusive of doors.) Ends (A) are connected by the bottom (B) and top rails (C), these being lap-dovetailed. Note that, as the doors and top drawers close on the top front rail (C) this latter is set in ½ in. Both top rails are notched to engage the divisions (D) which

may be housed or tenoned to the bottom. Drawer rails (E) are tenoned in (runners and kickers being added) and the plywood (F) is rebated to ends. Top (G) is glued down and screwed through rails (C).

First class drawers are always dovetailed, but in small sizes as the present the fronts may be rebated for sides and the thin ply bottoms glued on and pinned below (see detail sketch). The fronts of the two top drawers will project ½ in. (see sketch) so that they may close on front rail (C). Doors are hinged to open within the divisions (D).

Cutting List :	Long ft.	ins.	Wide ins.	Thick ins.
(A) 2 ends ..	2	2	11	⅝
(B) Bottom ..	2	2	11	⅝
(C) 2 top rails ..	2	2	2	⅝
(D) 2 divisions ..	1	1	11	½
(E) 6 rails ..		8	1½	½
(F) Back	2	2	13	
(G) Top	2	2	11	⅝

Four toes, 2½ ins. by 2½ ins. by ¾ in. Two doors, 12¼ ins. by 4¾ ins. by ½ in. Eight drawers, 7⅛ ins. by ½ in. thick (width, as noted, varying from 3 ins. to 2¼ ins.); drawer sides, 5/16 in.; back, ¼ in.; bottom, ⅛ in. ply. Allow also for runners and kickers. An inside shelf, resting on fillets, may be of ¼ in. ply.

ELECTRIC TABLE LAMP (Fig. 8)

HEIGHT, without lamp socket, 14 ins. The shaft of this lamp stand should be bored lengthwise for the flex before the wood is finally dressed to 1½ ins. square. This is a more satisfactory plan than building up the column from two pieces grooved on the meeting faces and afterwards glued together.

The shaft has shouldered tenons to pass right through base and top and be wedged. Chamfer the shaft, noting the details given. Note also section of base. Base may be left square, but it is better to work the top to an octagonal form, or at least to cant the corners to correspond with the shaft. If the toes are kept ⅜ in. high they will allow clearance for the flex without having to bore through side of base.

Cutting List :	Long ft.	ins.	Wide ins.	Thick ins.
Shaft (this allowing for through tenons top and bottom)	1	2	1½	1½
Base (or could be made up in two thicknesses) ..		6	6	1⅛
Top		4	4	½
4 toes		1½ square		⅜

CORNER BRACKET. (Fig. 9)

SHELVES may be housed or tenoned to sides. Sides are joined at back by a locking joint as indicated, or may simply butt and be screwed.

Cutting List :	Long ft.	ins.	Wide ins.	Thick ins.
2 pieces	1	4	6½	½
1 piece (for 2 shelves)		10	6½	½

BOOK END (Fig. 10)

Cutting List :	Long ft.	ins.	Wide ins.	Thick ins.
Base		5½	4	⅝ *or* ¾
Upright		8½	5½	⅝ *or* ¾
Buttress		7	3	1¾

See generally under Fig. 5. If the stop-chamfering on base is omitted the subject is a suitable one for veneering.

DOUBLE CORNER BOOKSHELVES (Fig. 11)

TOP and bottom are lap-dovetailed to ends (or in oak might be through-dovetailed). Back is rebated in, or may simply be pinned on over all. The two cases are screwed together and hung by means of brass ear plates.

Cutting List :	Long ft.	ins.	Wide ins.	Thick ins.
4 ends		9½	6	⅝
Top and bottom, 4 pieces	1	0	6	⅝
2 backs	1	0	9½	3/16 *ply*

SHOE-POLISHING STOOL (Fig. 12)

DIVISION and shelves are housed to ends. Top and bottom are rebated to ends, glued and screwed. Doors, hinged to bottom, fit within the box and close on shelves. Stout wood handles may be fixed to ends for lifting, and each door should have a wood pull or knob.

Instead of the inner division and shelves, the inside faces of doors might be fitted with pockets for holding brushes, polishing tins, etc. This depends largely on the kind of materials to be housed.

Cutting List :	Long ft.	ins.	Wide ins.	Thick ins.
2 ends ..	1	2	13	¾
Bottom ..	1	1	11½	¾
Top ..		11½	10	¾
Division ..	1	0½	10½	⅜
4 shelves ..		10½	5¼	⅜
2 doors ..	1	1	10	¾

(223)

HEN HOUSE

(*Continued from page* 27)

the bottom are nailed below.

The front of the chamber is also boarded in, an entrance about 10 ins. wide by 16 ins. high, with a semi-circular head, being cut in the middle. A run board 10 ins. wide, extending from the ground to the entrance must be provided. Small slips are nailed across at intervals, and it should hook underneath the floor of the roosting chamber in such a way that it may be removed for cleaning.

Back.—The back of the roosting chamber (see Fig. 6) is made with boards battened across the edges, and a few holes are bored for ventilation. It is necessary to make the back portable for cleaning the interior, so it could be simply fixed with buttons, or it may be hinged at the bottom and fitted with a lock. In a small house one perch, or in a larger one two, is fitted in the roosting chamber. The perches should be about 2 ins. wide by 1 in. thick, oval in section, resting in shaped cleats as shown in Figs. 6 and 7.

The Roof.—The roof of the chamber may be boarded and covered with roofing felt, or it may of course be covered with galvanised iron, but wood and felt make the house warmer. Boards could also be used to form shutters for the open portion of the run; they should be covered with felt and battened at the ends, the inside battens being allowed to overhang on to the fixed back portion of the roof.

These shutters could be hinged together at the ridge, and a couple of hooks may be arranged to hold them in place.

The door in the side of the house is made from 2 in. by 1 in. stuff, half lapped and screwed together. It will be most convenient to hinge it at the bottom, and it may be fastened with a turn button or lock.

Boxes.—Details of the nest boxes are shown in Fig. 8. They are made to fit within the opening at the back of the house, and are held in place with a couple of screws at each end. There are two ends and two divisions, to which a top and bottom are nailed. The top should overhang about 2 ins. at the back, and the bottom 1 in. at both front and back.

A slip about 2 ins. wide is nailed across the front at the bottom, another slip is nailed across the back at the top, and a door, which is hinged at the bottom, is made to fit between the slip and the bottom.

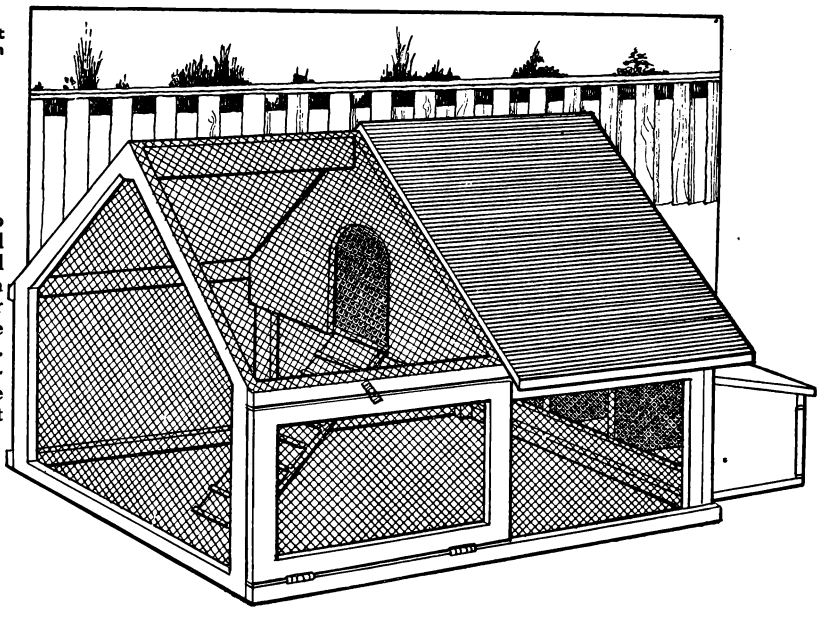
The wire netting at the front and sides of the run should be fixed inside the framework with wire staples, but that covering the roof is fixed outside. On completion all woodwork should be treated with a preservative, and the roosting chamber and perches limewashed. (221)

Note for Overseas Readers.—The fact that goods made of raw materials in short supply owing to war conditions are advertised in this magazine should not be taken as an indication that they are necessarily available for export.

THE WAR EFFORT

Please do keep up the good work of saving every scrap of waste paper for salvage. The necessity of it is as great as ever. Everything made of paper or cardboard is wanted; old newspapers and magazines, cartons, letters, bills, packing and wrapping of every kind. Pack up your bundle every week for the collector.

FIG. I. A HOUSE NEEDING LITTLE TIMBER.
The sizes can be adapted to suit either four or six hens. It is weather-proof, and should be warm in winter yet cool in the summer

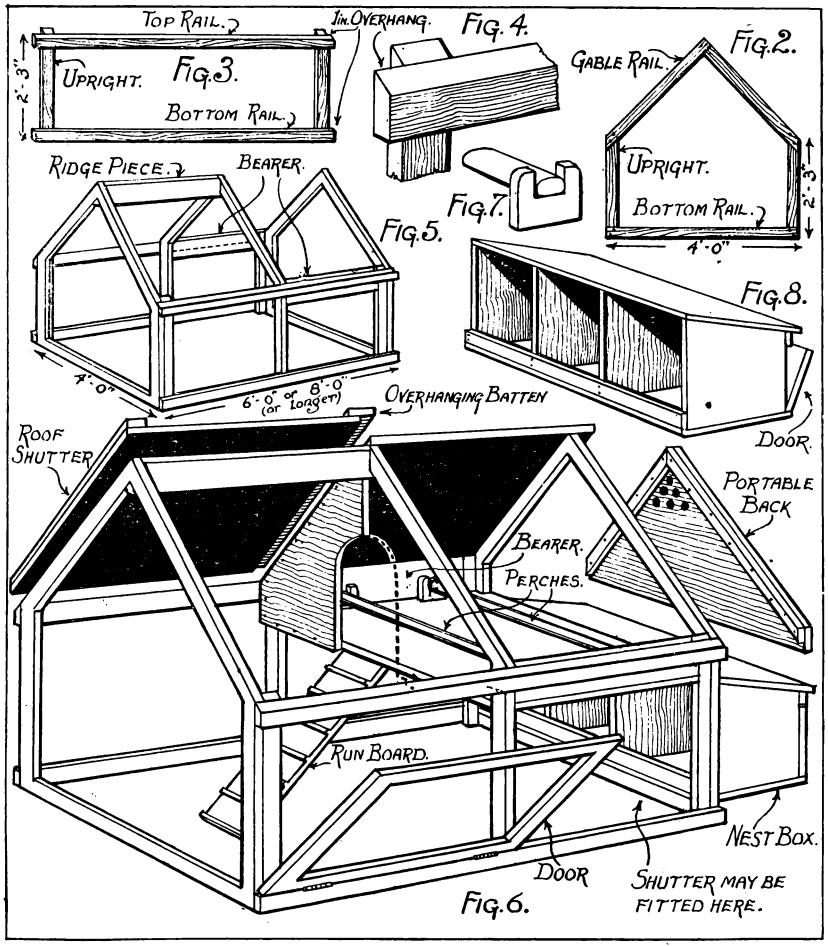


The Wartime Hen House

The scarcity of eggs has induced hosts of people to keep a few hens, and the continuing egg shortage will inevitably see a greater increase in the number of small poultry keepers. Practically everyone has room enough, even in backyard dwellings, to keep, say, four or half a dozen hens, and it is one of the most profitable of all the wartime efforts to increase food production. The hen house shown in Fig. 1 will interest those intending to keep a few birds. It is economical to build, little material being required, and this is a most important point when wood is so scarce.

TO be successful in poultry keeping the birds must be properly housed. It is essential to keep them dry at all times, and they should be warm in winter and cool in summer. This house has a fair size run, above half of which a roosting chamber is provided, access being by means of a stepped run board.

The roosting chamber is fitted with portable perches, and access to the interior is obtained from the back. A door is provided at one side of the run, and a nest box is fitted at the back. The sides, front. and a portion of the roof is covered with wire netting. Shutters could be arranged to cover the open part of the roof in wet or cold weather, and if shutters are arranged to close the netting-covered openings at the back of the run the house will be much warmer in winter.



Construction.—For four hens the house may be 6 ft. by 4 ft.; for six it should be 8 ft. by 4 ft., and proportionately longer for greater numbers. The house framing consists principally of three cross frames (Fig. 2), and two side frames (Fig. 3). The cross frames are made with two uprights 2 ft. 5 ins. long, two gable rails 3 ft. long and a bottom rail 4 ft long (in one frame this bottom rail is omitted), all being 2 ins. wide by 1 in. thick. Half-lapped joints fixed by screwing are used to frame the parts to the shape and dimensions shown in Fig. 2.

Side Frames.—These are made with top and bottom rails, 6 ft. or 8 ft. long (or longer if a larger house is being built), the top rail being 3 ins. wide and the bottom rail 2 ins. wide by 1 in. thick. Joining these rails are two uprights roughly 2 ft. 4 ins. long by 2 ins. wide by 1 in. thick. The top rails should be planed to the roof angle, and the uprights are screwed inside the top and bottom rails with the ends of the latter projecting 1 in. beyond the uprights as shown at Fig. 4.

The side and cross frames are fixed together as shown in Fig. 5, the projecting ends of the top and bottom rails of the side frames being fixed to the edges of two of the cross frames, and the cross frame without the bottom rail is fixed mid-way between. A fairly deep ridge piece is fixed over the open portion of the run, its ends being lapped under the gable rails of the cross frames and nailed. Bearers deep enough to project 2 ins. below the top rails of the side frames are fixed in the positions shown in Figs. 5 and 6 to carry the bottom of the roosting chamber, and boards forming

(*Continued on page* 26.)

MAIN SIZES AND CONSTRUCTION

When you take a Template

The woodworker frequently requires templates of various kinds, especially when he has to make a fitment of some sort to fit up to an existing wall, or whatever it may be. Or he may have to copy an existing piece of work in which case he will need to make templates of existing shapes, mouldings, and so on. This article describes the chief methods that can be used.

PERHAPS the chief occasion when you need a template is when making either a corner cupboard or some other corner fitment, or possibly a structure to fit in a recess in a wall. It is strongly advisable to make a full size template of the wall plan as it is the only way to ensure a perfect fit for the woodwork you make.

For a quite simple job you can cut the template either in stout cardboard or plywood ; even stiff brown paper can be used. For a plain angle all you need is to reproduce the actual angle and any inequalities in the wall that may exist. For instance, few corners are at perfect right angles, and if you prepare a template first a great deal of trimming and fitting later on is avoided. Fig. 1 shows such a simple template. Alternatively two battens can be laid against the wall on the floor and a diagonal strut fixed across to hold them at the required angle as in Fig. 2.

Large Templates. — Sometimes, however, especially in large work, it is necessary to build up a more elaborate kind of template, and then you can follow the idea suggested in Fig. 3. It consists simply of a series of battens or laths nailed together. In the example shown the first step would be to prepare the top batten to fit into the recess. The smaller batten is nailed to it to form the continuation, and further battens are fitted to the adjacent wall. You could, if desired, mark out the actual job on the template, but this is not usually necessary.

Whilst on the subject of recesses, always take special care to measure both the inner and outer sizes as shown in Fig. 4. It frequently happens that the corners are out of square so that you may find that, if your fitment is made to the outer size, it cannot be pressed back into position. If on examination the difference is appreciable, you would be well advised to make a template as in Fig. 5. Even if you are making only a series of shelves to fit in the recess the template is handy because you can then cut all the shelves exactly to size straightway.

Floor Scribing. — Sometimes you need to make a template which records inequalities in the flooring or the wall. If a fitment has to be made in the workshop for erection in a house, it would be an advantage if you could make it to coincide exactly with any inequalities before taking it into the house for erection. These inequalities can be recorded by means of dividers as shown in Fig. 6. Here it will be seen that the floor boards have warped badly, and by placing a template across them (this template is a plain piece of wood, straight at one edge) and opening the dividers to any convenient extent, a line exactly parallel with the floor boards can be drawn. Of course, this could be done on the actual job itself immediately before erection in position, working the dividers along the plinth ; but it is often more convenient to do this trimming in the workshop before erection. Instead of the dividers a little block could be used as shown inset, Fig. 6. The important point is to keep the bottom of the block pressed on to the floor and square with the template.

Spiling.—Another way in which a template can be prepared is by the method known as spiling. It is frequently used by boat builders for taking off the angles of boats. It might be useful in woodwork in many ways ; for instance, in fitting say, a plywood panel around some irregular projection, or it might be a piece of lino to be fitted around some object, such as the pedestal of a washing basin. Fig. 7 shows its application for this purpose.

First prepare a template or spiling piece, the shape of which is roughly that of a U, the opening in which is about 1 in. larger all round than the size of the projection. Fix this down and with a set square held with its point touching the projection, draw a line all round on the template as shown in Fig. 7. The position of the set square doesn't matter. Repeat the process all round until the shape of the projection has been followed round. Of course, the more marks made the more accurate the eventual cutting will be. Now withdraw the template and place it upon the edge of the material to be cut as at B, Fig. 7. Place the set square on each mark in turn and make a pencil mark on the material, carrying it around the point. In this way you will have a series of V marks, and the points of these when joined up form the shape to be cut out.

Moulding Templates.—Mouldings have frequently to be copied. The simplest way when it is practicable is to hold a piece of cardboard at the end and run a sharply pointed pencil around the profile as in Fig. 8. This is not always possible, however, because the moulding may not have an end exposed. You will then have to resort to measuring with rule and square. Fig. 9 shows you how this can be done. The projection at the top can be measured straight from the actual moulding ; also the depth of the bottom thickness. This is given at A, Fig. 8. For the intermediate quirk hold the rule against the wall and hold across it some straight edge such as a square, keeping it parallel with the wall. This will give the projection at this point (see A).

B shows how the height can be measured. This time the square is placed at the bottom of the moulding projecting outwards into the room. Place the end of the rule level with the top of the moulding, and the point where the square cuts the rule gives the height. The intermediate quirk height can be marked in the same way. Once these points have been plotted on to a piece of paper as at C the curves can be drawn in free-hand. Though here for important work it may be necessary to make a reverse template by trial and error method, fitting these up against the moulding until it coincides at every point. There is no difficulty about making this if the main quirk positions have been marked out previously. Sometimes sizes can be conveniently taken off by means of calipers, Fig. 10.

VARIOUS KINDS OF TEMPLATES.

Fig. 1. Simple template in card, paper, or plywood.

Fig. 2. Angle of corner fixed with battens nailed together.

Fig. 3. More elaborate shape built up with battens

Fig. 4. Measuring length of recess with two strips. Both inner and outer sizes are noted.

Fig. 5. Template of recess.

Fig. 6. Scribing to floorboards.

Fig. 7. Cutting material to fit round projection by the method known as spiling.

Fig. 8. Taking shape of moulding.

Fig. 9. Noting moulding sizes when end cannot be reached.

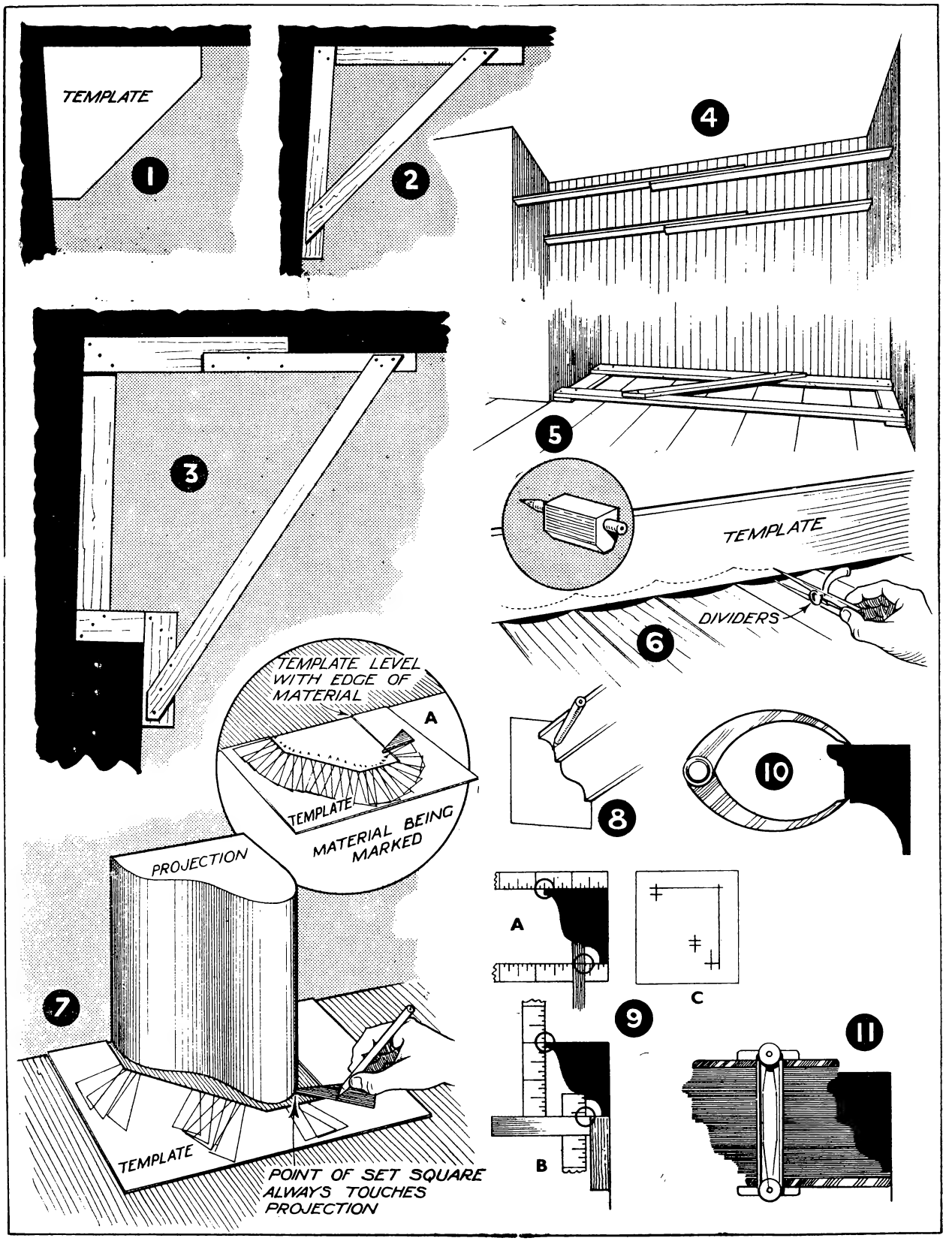
Fig. 10. Calipers for measuring.

Fig. 11. The "Maco" template used for moulding.

Incidentally, a useful template known as the Maco Template is available for taking off the profiles of mouldings. It consists of a vast number of thin brass strips held together by a clamping piece. In use the thumbscrews are slackened and the template pressed against the moulding as in Fig. 11, care being taken to keep it square with the wall. The brass strips are automatically pressed back in accordance with the shape of the moulding. Since all the strips are exactly the same length you have also a reverse as well as a true template of the actual contour. Incidentally this template should prove useful also in model boatbuilding work. (215)

It is probable that the set given to saws originated in Europe. At any rate it is an ancient invention, for at the lake-village of Glastonbury, which dates from before the Roman invasion, a saw was discovered, the teeth of which were set. Mention is also made of a saw with set as being specially suitable for cutting green timber " a method by which the sawdust is discharged " by Pliny, the Roman, who flourished over 18 centuries ago.

TAKING A TEMPLATE OFTEN SAVES TIME



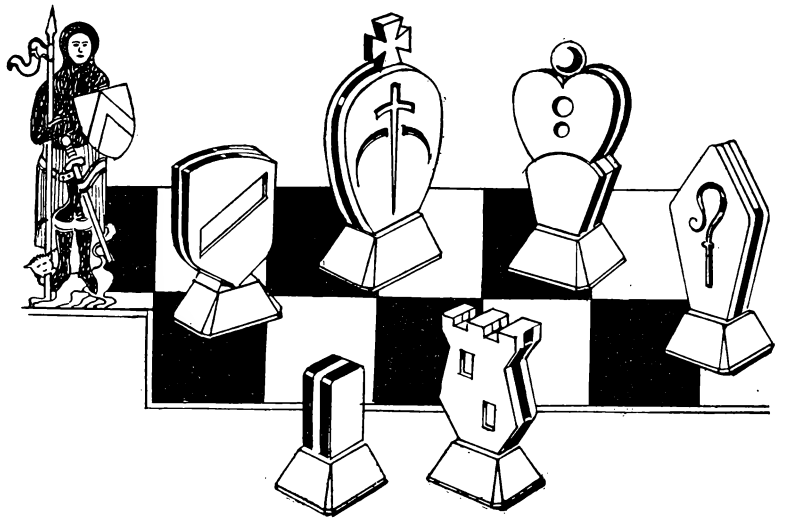


FIG. 1. MADE FROM ODDMENTS OF WOOD
Three pieces are glued together sandwich fashion. For "white" a light wood is used for the outer layers with a dark one in the middle. For "black" the dark wood is used outside.

Modern Chessmen

Made without a Lathe

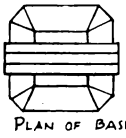
Once upon a time a Chinese Emperor was so bored with his usual recreations that he politely requested some of his wise and learned countrymen to invent a new game for his amusement. One luckier or more inventive than his fellows presented his ruler with a set of chessmen and a board with the rules of play. So highly pleased was the Emperor that he offered the fortunate inventor of chess any reward he liked to ask. "I shall be content," said he, "with one grain of rice on the first square, two grains on the second square, four grains on the third square, and so on, doubled to the last square on the board." The Emperor was surprised and dismayed to find that he was unable to fulfil his promise. There was not enough rice in the kingdom. However, it is a royal and ancient game, whether the above story is true or not, and an excellent game for wartime winter evenings.

LIKE most other things, there is a short supply of boards and pieces. This is where the woodworker can score, even if he does not possess a lathe for turning the men. He can cut these pieces with ordinary tools. The idea is to glue light and dark woods together sandwich fashion; the white men having the light wood outwards and the black the dark wood outwards, say, three thicknesses of ⅛ in. thick wood tenoned into a separate base. The two sets of men are alike except for this interchanging of woods.

Making the Pieces.—Any odd pieces of rare hardwood could be used. White sycamore and dark walnut, satinwood and mahogany, or box and ebony. Whatever is used should be of close hard grain. If preferred there is no need to sandwich the wood. Plane it to finish ⅜ in. thick and cut to shape. The contrasting woods would look very much nicer, however. Get out in strips 1½ ins. wide as long as conveniently possible. You will be sure then of having every piece of equal thickness. Remember to leave on enough for the tenons into the bases when marking out (see the dotted lines on the scale drawings).

It will also be noted that the bases are graduated in size. For the pawns, of which there are eight of each colour, it would be easier to bevel a length of wood sufficient for eight pieces and mortise before cross cutting and bevelling to finish. The carved decorative features shown on the chief pieces are only very slightly incised. Do not cut too deeply.

With a playing board veneered with the same woods as the pieces, carefully cut and wax polished, this set will be a pleasure to make and to own. For pieces cut to size as shown, 2-inch squares would be suitable. Reduce the squares proportionately for smaller men.



Each set of pieces comprises King, Queen, two Bishops, two Knights, two Castles (or Rooks), and eight Pawns, 32 pieces complete for the two sets, white and black men. (227)

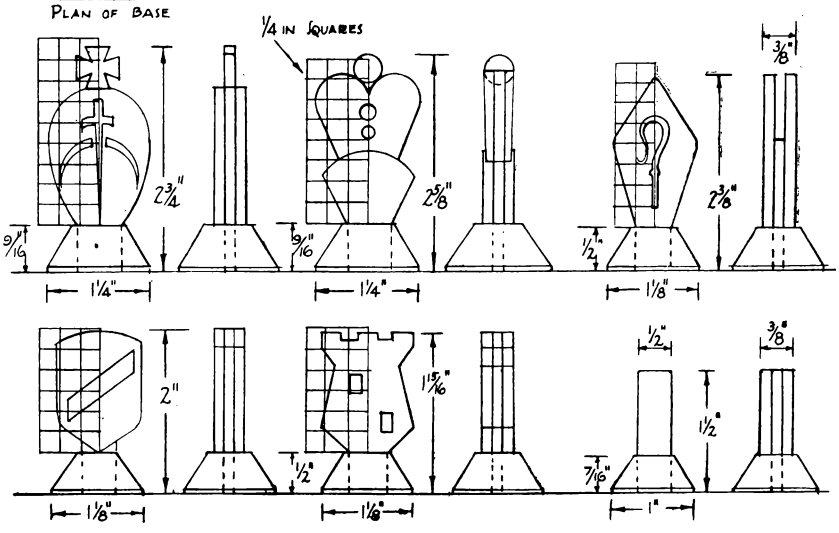


FIG. 2. DESIGN OF THE PIECES.
Set out in ¼ in. squares.

BY THE WAY

Who invented the plane is uncertain, but the Romans certainly used it. They may have taken the idea from other races, or they may have hit on the idea themselves. Planes of Roman origin have been found in the ruins of Pompeii and at Silchester in this country.

* * *

The back iron was probably introduced into planes during the early 19th century. No plane of earlier date than this has been discovered with a back iron.

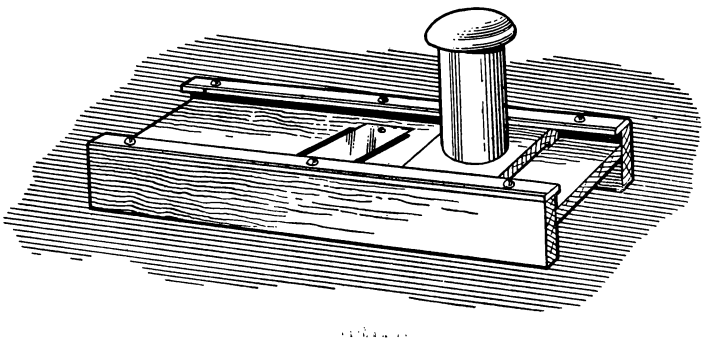
* * *

Please carry on the good work of saving every scrap of waste paper. Remember that you as a woodworker are in a specially favourable position to do so because you do not need paper to start your fires; shavings are better.

* * *

A hollow punch is best for nails because there is no liability for it to fly off the nail head.

THE SLICER READY FOR USE.
The plunger which forms the knob is removed and the vegetable or peel put into the container. A moderate pressure is exerted whilst the slide is moved back and forth over the cutter.



Vegetable Slicer

This simple device will be found useful in the kitchen for slicing potatoes, cucumbers and carrots. It will also be found most effective in slicing orange peel for marmalade when we can once again make this preserve.

THE slicer operates as follows, assuming that orange peel is to be sliced. The plunger *a* is removed from the container *b* and the peel, cut into sections, is placed in the container and the plunger inserted. A slight pressure is applied to the plunger by the right hand, the slicer being held down by the other hand. A reciprocating motion is then given to the container which in passing to and fro over the blade *c* causes the peel to be sliced. The slices collect under the slicer and are periodically removed.

Suitable dimensions for the slicer can be ascertained from the scale, but they need not be adhered to; in fact, they may be determined by the size of the container. This may consist of a baking powder tin with the bottom removed.

Material.—The sides, base and slide are best made from sycamore, as this wood has a very clean appearance, but any hardwood may be used. Plywood is also suitable.

Construction.—The sides *d*, Figs. 1 and 2 should be prepared in one long length. Care should be taken in truing up to see that the strip is of equal width throughout its width, otherwise the slide *c* will not move freely. Similar care should be taken in the preparation of the base *f*, Figs. 2 and 3.

The cutter, *c*, Fig. 5, can be made from an old scraper. This will require annealing in order to render it soft so that it may be cut to shape, with a hacksaw, and the fixing holes drilled. When completed, the cutter is again heated to a cherry red and plunged into water. It will now require tempering. This may be done by heating the cutter over a gas flame or in sand heated in a shovel over a fire. When the cutter shows a pale straw colour it is again quenched in water. This done, the bevels can be ground and the edges sharpened.

The base is now slotted as shown at *g*, Figs. 3 and 4, the width of the slot being greater than the width of the cutter by $\frac{1}{16}$ in. The long sides of the slot should be bevelled on the underside of the base as shown in Fig. 4. It will be noticed that the cutting edges of the cutter are slightly above the surface of the base. It will therefore be necessary slightly to recess the cutter at either end.

Assembling.—The sides *d* are nailed and glued to the base. The slide retaining strips *h* are screwed in position in order to prevent any tendency for them to be forced up by the action of the slide. In preparing the slide *c*, care should be taken to see that it slides freely. The hole for the container *b* can be cut with a fret saw or, better still, on a lathe, if one is available. In order that the slide may clear the cutter, it is necessary slightly to recess the underside of slide as shown at *i*, Fig. 6. The width of the recess should be a little in excess of the length of the cutter so that there will be no possibility of the slide fouling the ends cutter. The container is secured to the slide by gimp pins, Fig. 6.

If the worker has a plough plane the construction can be simplified by providing grooves in each side *d* for the slide and base respectively. This will dispense with the retaining strips *h* and also the need to recess the slide.

The plunger *a* is best made on a lathe, but it can be prepared as a simple cylinder without the rounded head, in which case it should be slightly longer than the container so that it can be easily removed.

If the worker so desires, the slicer may be cramped to the edge of a table.

(*Continued on page* 33)

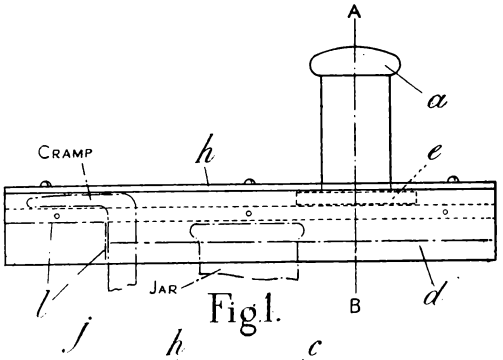


Fig. 1.

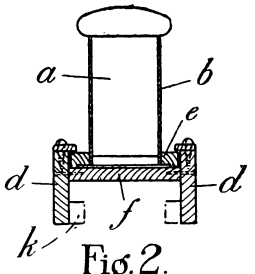


Fig. 2.

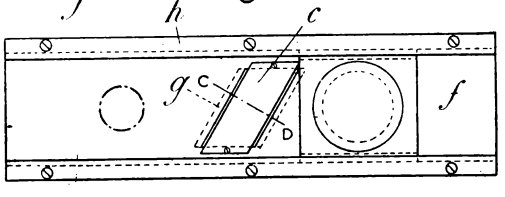


Fig. 3.

SECTION A–B

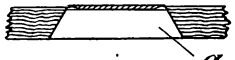


Fig. 4.

SECTION C–D

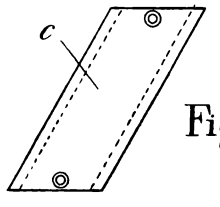


Fig. 5.

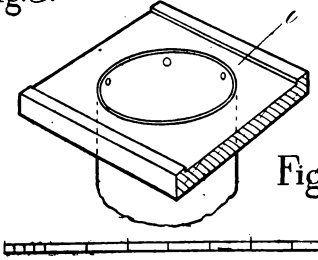
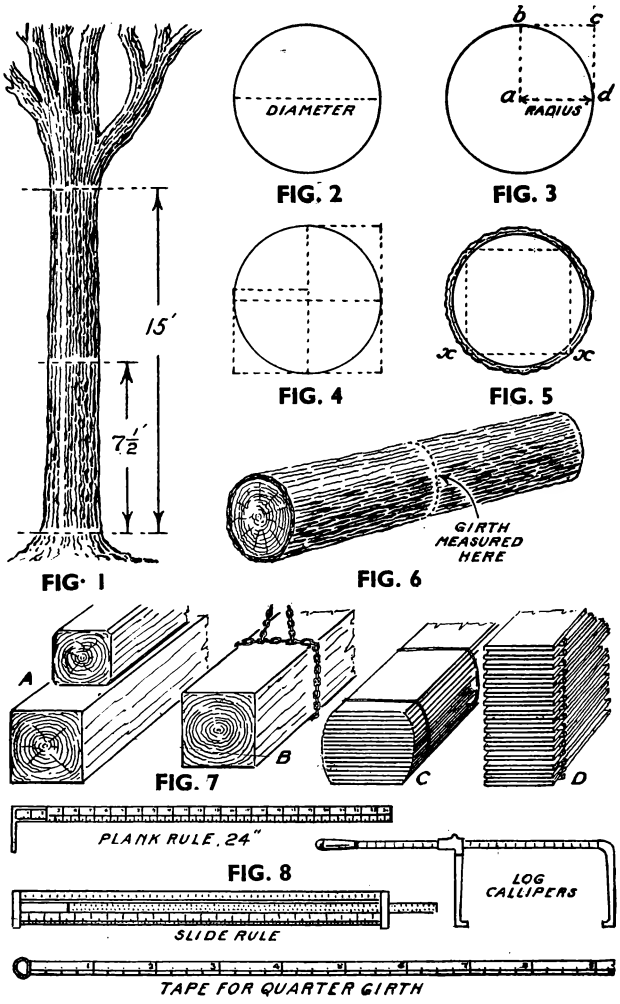


Fig. 6.

ELEVATION, PLAN, SECTIONS, AND DETAILS OF CONSTRUCTION.



DETAILS OF MEASUREMENT TO KNOW

Fig. 1.—The girth of the main straight stem is measured half-way up.

Fig. 2.—The circumference of a ci cle equals the diameter x 3 1/7.

Figs. 3 and 4.—The area of the square of the radius multiplied by 3 1/7 gives the area of the circle.

Fig. 5.—A round log regarded as square (*x*—*x* equals one-quarter of the girth).

Fig. 6.—Showing where the girth of a log is taken.

Fig. 7.—(*A*) Squared logs. (*B*) Heavy Log raised for the tape. (*C*) Cut boards banded for shipment (measured in bulk). (*D*) Cut boards of uniform size stacked, the total calculated from length and width of one board.

Fig. 8.—24 in. Plank Rule. Slide Rule. Quarter-girth Tape. Steel Callipers for measuring girth.

How Timber is Measured

To the majority of us who merely handle cut timber its measurement is a very simple matter. In half a minute we can find with a footrule the length, width, and thickness of a board. Should we require to know the *superficial* area we multiply the length by the width; whilst, if the *cubic contents* be wanted, we multiply length, width, and thickness. Thus a board 12 ft. by 9 ins. contains 1296 square inches, or (dividing by 144), 9 square feet. If the thickness is 2 ins., then 12 ft. by 9 by 2 gives 2592 cubic inches, or (dividing in this case by 1728), 1½ cubic feet. But all timber measuring is not so simple as this, and in the trade many of the methods are confusing and some complex. These differ not only as between softwoods and hardwoods, but also between different kinds of hardwoods. In the case of imported timber they may differ, too, as between the port of lading and the port of delivery.

GENERALLY speaking, timber comes under one or other of these four categories:

1. Standing timber; that is, growing trees, singly or grouped.
2. Felled stems or logs in the round.
3. Squared logs; that is, roughly squared after the removal of the bark slabs.
4. Cut timber, such as planks, deals, boards, scantlings, etc.

Standing Timber.—Here it is needless to deal with irregular or distorted trees, or to consider the total number of cubic feet that a tree will yield after stem, limbs, tops and branches have been sawn up. In actual practice this is often a matter of mutual arrangement on the spot. In dealing with normal healthy trees, the calculations may not be complex; but, just because much must be a question of estimate, long experience and shrewd judgment are required on the part of both seller and buyer. In most cases the expert eye can usually make an approximate estimate of the cubic contents (that is, saleable) of any tree; and, in a spirit of give and take, vendor and vendee will strike a mutually satisfactory bargain.

In the case of a specially valuable area more accuracy is required, and each tree will have to be taken on its merits. As the timber is sold by weight, it is the cubic contents that are calculated. For this purpose the tree is taken in sections: (*a*) the main stem; (*b*) the greater limbs which, if not distorted, may yield valuable timber; (*c*) the top and the secondary branches.

The method of arriving at the cubic contents of a stem or log is dealt with in the next paragraph. Here it may just be said that the girth of the main bole is, as a rule, taken half-way up (see Fig. 1), this to arrive at the average. Limbs, tops and secondary branches are estimated and agreed, and the final contents are ascertained by reference to a ready reckoner (such as the standard *Hoppus*) which dealer and buyer are never without.

Round Timber is the fallen stem or log. A tall larch, for example, may be felled. After lopping off the branches and the top, the stem will be sawn through in lengths of, say, 9 feet (or as required). As the girth diminishes throughout the length, each log (Fig. 6) is measured separately for cubic volume, due allowance being made for the thick bark. In the case of hardwoods such as oak, beech, ash, sycamore, etc., the greater limbs will be separated from the bole and measured independently.

Now, here it is well to recall some arithmetic. Referring to Fig. 2, remember that the circumference of a circle is equal to the diameter multiplied by 3 1/7. (This is the nearest fraction.) Thus if the diameter is 21 ins., the circumference will be 66 ins. Conversely, if the girth, or circumference, is 66 ins., we divide by 3 1/7 and get the diameter of 21 ins. or a radius (half the diameter) of 10½ ins.

Recalling this, we are able (by another rule) to arrive at the superficial area of any circle. Turn to Fig. 3. Take the *radius* of any circle and on it set up an imaginary square, *a, b, c, d*. If the *area* of this square is multiplied by the former figure of 3 1/7 it gives us the superficial area of the circle. This may be clearer from a glance at Fig. 4, where you have 3 squares (each representing a third) and a narrow strip representing the one-seventh. Thus, if the radius is 10½ ins., the area of square *a, b, c, d* is 110¼ square ins. (10½ by 10½). Multiply this by 3 1/7 and the area of

the circle is 346½ square ins., or about 2·4 square feet. If the object being measured is a log, then 2·4 multiplied by the length gives us the total cubic contents irrespective of bark,

This is the mathematical side. It applies to a circle which might be drawn on paper; but in the case of a log in the round it is the commercial timber we are measuring and allowance has to be made for the bark and for any irregularities. This has led to the adoption of a simple and almost universally-adopted method which rescues us from tiresome multiplication and division.

The practice is to assume that the log is square instead of round (see Fig. 5). The size of square arrived at by taking one-fourth of the girth and accepting this as the base line (*x*—*x*) of the square. Thus, if the girth at middle of log is 48 ins., one-fourth of this is 12 (the length of *x*—*x*) and the area of the square is 144 square ins., or one square foot. Multiply this by the length of log and we have, in cubic feet, the accepted commercial contents. Long experience has shown that this method makes ample allowance for bark, irregularities in section, etc. The actual allowance works out at approximately 27 per cent., or just a fraction over a fourth. No wearisome calculations have to be made, as the sliding rule (Fig. 8) or the ready reckoner gives the total at a glance.

Squared Logs.—These (Fig. 7) apply chiefly to large timber which is imported, waste being removed to reduce the bulk and weight. Many logs are of enormous size, each weighing several tons. The actual method of measurement hardly concerns us, the systems varying. As a rule the logs (which may be over 3 ft. square) are measured for girth half-way along each side with large steel callipers, and for length by a 10 ft. rod. The sliding rule then gives the cubic volume.

Overseas, where the timber may be housed in water, measurements are taken in the same way, but from a raft. If, however, the logs are round, the girth is measured with a tape on the quay before transference to the water. Irregular butts and stumps are almost invariably sold by weight without measurements being taken.

Cut Timber.—Here much depends on how cut timber is sold, and if we understand this, any matter of measurement is simple. Unless under exceptional circumstances neither weight nor cubical contents concern us; we think in term of lineal feet or square feet.

Firstly, if we deal in large quantities of softwood, we think "per standard." The basis of this standard (known as the "Petrograd") is that the parcel shall contain the equivalent of 120 pieces 6 ft. long, 11 ins. wide and 3 ins. thick. The purchaser of a "standard" receives this in *bulk*, irrespective of width or thickness. A simple calculation will show that, if he orders stuff 11 ins. by 3 ins., the total *foot run* will be 720 ft. If he wishes for smaller stuff of, say, 9 ins. by 2 ins., he will receive 1,320 feet. Or again, if it is mere scantling of 4 ins. by 2 ins., his delivery will be just under 3,000 feet. In every case, whatever the width and thickness, the total volume is 165 cubic feet.

In buying small quantities it is usual to pay so much per lineal foot according to the width and thickness of the boards. This, however, whilst applying to scantlings, is different in the case of floorboards and matchboarding which, although retailed as "per standard," are sold as "per square"—that is, by the square foot. Thus we translate a 12 ft. by 7 in. floorboard into square ins., which give 7 sq. feet. In doing this we have to bear in mind that a 7 ins. by 1 in. board may hold up only to 6½ ins. by ⅞ in. when dressed. This applies to other sizes of prepared boards.

Furniture hardwoods are also sold to the consumer per square foot, and every buyer should be quick in making a mental calculation. A board of oak may take our fancy and we may learn that it is so much per foot (square foot). We measure it—perhaps 5 ft. 6 ins. by 10 ins. A moment's thought: 5½ by 10 make 55 or just over 4½ square feet, and we know the total cost. Of course we remember that the edges have to be trimmed and that the thickness (it ⅞ in.) will finish about ¾ in,

In different timber yards we come across varying methods, and every rule has its exceptions. Import and wholesale systems, too, differ from those of the retail trade. If, however, we are moderately familiar with the general practice, it is not difficult to accustom oneself to variations.

Measuring Instruments (Fig. 8).—Here we may put on one side the everyday footrule, the 5 ft. or 6 ft. rod and the ordinary tape. In woods a party will be armed with a 10 ft. or 12 ft. pole and a quarter-girth tape (Fig. 8). In some cases a 5 ft. or 6 ft. rod will serve, and a footrule will usually be in the pocket. With these and a *Hoppus* reckoner all calculations can be made.

In the big timber yards and at the docks different measuring tools are used, and these vary in different countries. Rods of 10 ft. are usually at hand for lengths; whilst for widths of prepared timber there is the plank rule (Fig. 8) which may be 12 ins., 24 ins. or more long. For girths the callipers are used for smaller round logs, and the linen tape for heavy round or squared logs. From the slide rule, with its 144 divisor, the cubical contents are ascertained automatically. The tape shown in Fig. 8 is the "quarter girth," that is, the divisions figured 1, 2, 3, etc., each represent *four* inches, this to facilitate the calculations as already indicated. **(233)**

Veneering with Tortoiseshell

TORTOISESHELL has been used in woodwork for many years. Indeed, during one period of the 18th century it was used almost exclusively for small clock making. At the present time it is not widely used—in fact it has been largely replaced by an imitation substitute which has the advantage of being procurable in much larger sizes than is possible with the genuine article.

It is tricky stuff to deal with when you handle it for the first time, especially when it has to be laid over a curved surface. In the first place it is not an ideal substance for gluing, is liable to crack if bent too acutely, and is transparent to the extent that any marks beneath it will show through. This means that ordinary veneering methods have to be modified accordingly.

You cannot use the hammer successfully for laying the tortoiseshell. Close contact with the groundwork is vital until the glue has completely hardened, and this makes the use of a caul essential. When a curve has to be negotiated the caul must be shaped accordingly. In some difficult cases a sandbag which will take up the irregularities can be substituted. Steaming or hot water will enable tortoiseshell to bend, but in extreme cases a piece of linen should be glued over the face to prevent it from cracking. It can then be taken round quite acute bends. To soften imitation tortoiseshell acetic acid is used, the substance being laid in it. All acid must be removed afterwards as soon as possible as it will eventually dissolve it.

It is essential that the back is scored to give the glue a key, but ordinary toothing is out of the question as it is too coarse, the marks being liable to show through. The better plan is to use a file—or medium glasspaper could be used. So far as glue is concerned, nowadays synthetic resin is generally used in the trade, it having been found that this gives the best results and can be used cold. Originally Salisbury glue was used, this being similar to Scotch but made of the skins of animals rather than the hoofs, etc. If Scotch is used it is essential that it is made up fresh for the purpose. Glue which has been repeatedly heated up is of little use.

Much tortoiseshell work is of a warm tone, and to produce this the glue must be coloured red. Rouge powder mixed with it is just the thing since it is extremely fine and gives a more even tone. (192)

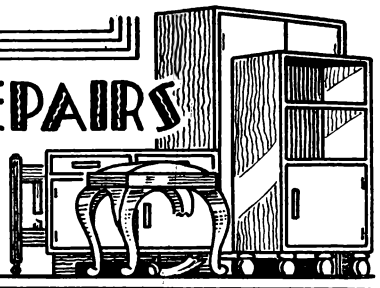
VEGETABLE SLICER

(*Continued from page* 31)

The only modifications necessary are indicated in dot and dash lines. They comprise a hole in the base for a G cramp, shown at *j*, Fig. 3, and two strips *k*, Fig. 2, to hold a glass jar under the cutter. It is advisable to cut away the sides *d* as shown at *b* in order that the slicer may butt against the table edge. If it is intended that the slicer should be cramped to a table it would be advantageous to increase the length of the slicer. (204)

Old and new FURNITURE REPAIRS

Bedstead Ends and their breakages



The present shortage of furniture and materials now makes it essential that what furniture we do possess should be kept in good repair. In this series of articles, therefore, we are dealing with typical breakages, giving helpful hints and suggestions on the best methods to be adopted. In these times, as you know, one is not merely concerned with a simple repair. One must consider materials and the difficulty of procuring them. Whenever possible, one must endeavour to use less wood—especially *new* wood—by joining and splicing the broken parts together in the most advantageous manner.

AS seen in Fig. 1, the breakages arising in common bed ends are largely due to cheap materials, poor workmanship, and rough treatment (possibly during transit from one place to another).

Broken Posts.—The likeliest cause of breaks in plain bed legs is a shortened, cross-running grain, or possibly that dangerous and almost invisible flaw known as the "thunder-shake." The latter is a fracture healed with sap—a tree scar in fact; a sudden, hard knock suffices to break the fracture cleanly apart, but fortunately such scars are found mainly in mahogany and very rarely in oak.

When the break is diagonal, there are several ways of making a sound repair. The "locked" splice (A, Fig. 2) is ideal, but if not fitting a new piece, the leg length is reduced by about 2 ins. (see B). The plain diagonal splice (C), which is the easiest, only reduces the length of the leg by about 1 in.

This reduction in length must, of course, be removed from the opposite leg also, including the head end legs. Alternatively, the opposite leg could be reduced and the bed iron fittings raised up to the usual height of 14 ins., i.e. the same height as those fitted on the head end. This cuts out unnecessary work in regard to the castors, etc.

Incidentally, never remove a leg from a piece of furniture in order to carry out a repair if such can be avoided, for in knocking it off the other joints are loosened, apart from the resultant damage done to the finish. By doing so, one has practically to re-assemble the complete piece of work.

The flat break in Fig. 1 is purposely shown near the lower cross-rail of the bed end. In such a case it would be advisable to fit a new, complete leg. However, a quite strong splice can be made, this being a straight, half-lapped, locked joint (D, Fig. 3). This means using a new piece of bed post—one cannot do anything else, unless the parts are neatly dowelled together, which is neither satisfactory nor safe.

Owing to the bottom cross-rail and (if any) panelling, the rest of the leg must be removed. Having spliced the parts, as shown at D, Fig. 3, glue and screw them together. Drive the screws from the bed iron side so they do not interfere with the screws holding. Note how two of the bed iron screws can be used to help strengthen the joint.

When the glue has set, the holding screws are temporarily removed, and the leg prepared for assembly. By having the holding screws to the bed fittings side of the leg, one has not to sink the heads and conceal with a plug of wood, wax, etc., as the bed iron covers them.

Use the glue hot and heat the joints before assembling.

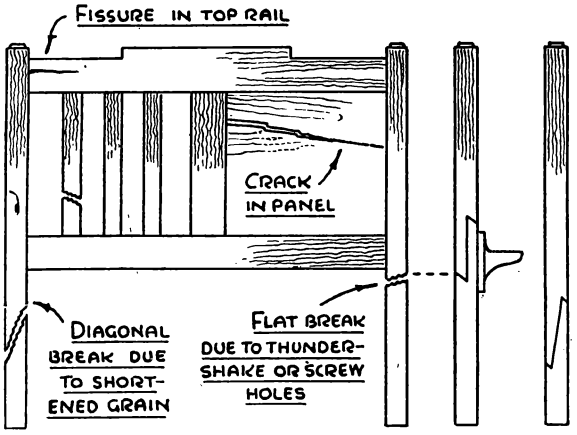


FIG. 1. TYPICAL BREAKAGES AND THEIR REPAIR.
Faults like these frequently occur

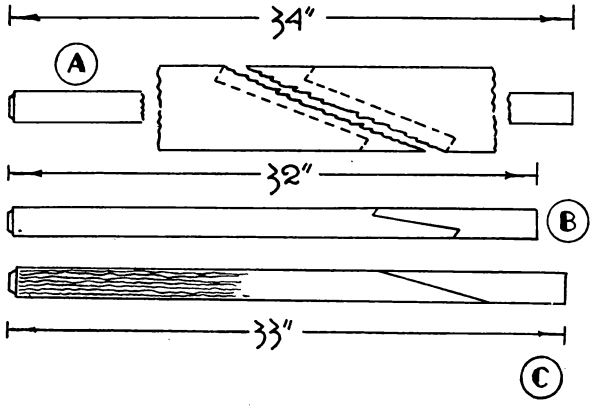


FIG. 2. METHODS OF REPAIRING POSTS.
A and B show the locked splice joint. C is a diagonal splice, not so strong.

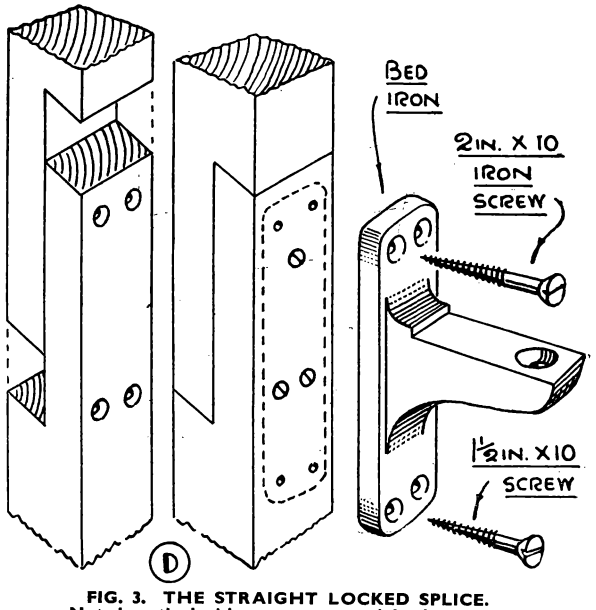


FIG. 3. THE STRAIGHT LOCKED SPLICE.
Note how the bed-iron screws pass right through, so strengthening it.

A thoroughly reliable joint is the dowelled, half-lapped, plain splice (E, Fig. 4). Such a joint used in repairing legs makes them as good as new. The diagram is self-explanatory, but in the case of light finishes one must try to select a piece of wood similar in grain to the old piece.

Laths.—The upright laths in bed ends often become cracked if the bed end falls against a sharp object. Repairing such breaks is a simple enough task if one can use the broken pieces, but a complete new rail is a different matter, for it generally means knocking the bed end asunder in order to fit the new railing.

One may, nevertheless, avoid going to that extreme as we show in Fig. 4. The new rail—or repaired rail—can be easily fitted if a portion of the mortise is removed so that the bottom tenon can be pushed in after inserting the top one. The gap is sealed with a flat plug of wood.

The rail with a shoulderless side (F) permits a square-ended, dovetailed plug to be used. It is fitted first and trimmed up, of course. Having glued the rail in position, the plug is tapped home and requires no nailing.

Where shouldered rails are concerned, however, a different method must be employed as at G. The plug is wedge-shaped, laterally, and may need to be affixed with panel pins after gluing in place. It is possible to make a neat, tight fit without the need for nailing.

Rails.—A breakage in a thin rail can be effectively repaired by gluing the parts together and driving in suitable joint fasteners at the sides or end edges. Another plan is to fit a dovetailed strengthening piece (G). If the break is long and spiked, one could merely glue the parts together again, pushing the break tightly together with the hands, for a start, then by clamping them between flat pieces of wood to hold bent splinters down.

Before setting the work aside to dry, force the jagged ends right home by tapping the top end with a hammer while holding the rail upright on the ground. It is a quick, simple, natural repair which is surprisingly strong. Naturally, look along the length of the repaired rail to see that it is quite straight before allowing the glue to set.

Panels.—Regarding fissures in cross-rails and cracks in thin panels, the former is often repaired by rubbing hot glue into the fissure and by applying a pressure across the rail with a sash cramp or wooden hand clamps. A large crack in a panel such as that in Fig. 1 is treated similarly, if removed, but you will save much time and trouble by trying to repair the panel while in its framing.

The easiest plan is to fill the crack with plastic wood, using plain plastic for oak and mahogany-coloured stuff for mahogany. If the panel is loose in its framing, one could run glue into the break, then prise the halves together by inserting a leverage at the top. A chisel, or sharpened bradawl, will grip the wood surface effectively, whereas the edge of the rail serves as a fulcrum until small. thin wire nails can be driven into the panel to maintain the pressure. (218)

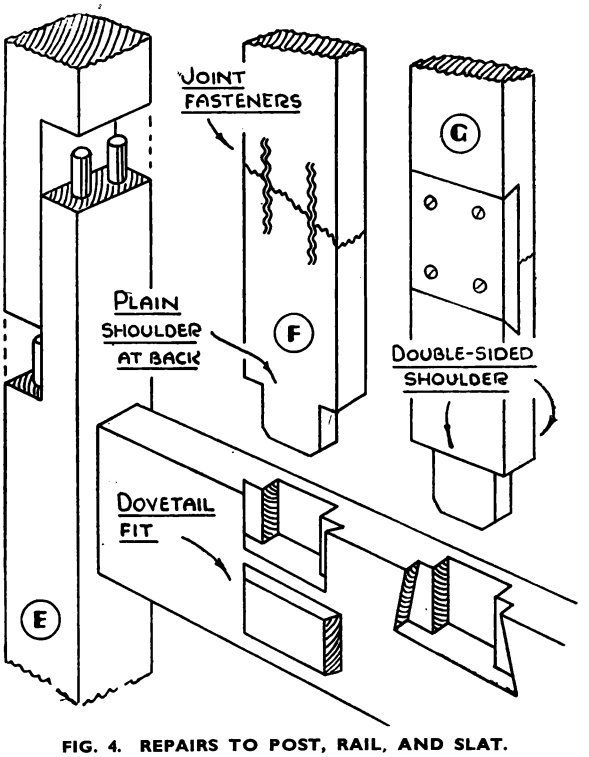


FIG. 4. REPAIRS TO POST, RAIL, AND SLAT.
is a strong dowelled splice. F and G are ways of dealing with broken slats.

By the Way

Salisbury glue is similar to Scotch glue, but is made from skins rather than bones, and is a specially high class product. Both are animal glues, but, whereas Scotch glue is a bone glue, Salisbury glue is a skin glue.

* * *

Whereas thirty years or so ago it was recommended that wood planes should be soaked with linseed oil by filling in the mouth and pouring oil into the escapement, to-day the practice is condemned by most plane makers as tending to cause casting. Instead a few rubbers of shellac polish are recommended.

* * *

Few veneers are cut by saw to-day. The knife is far less wasteful since the veneers themselves are thinner and there is no waste in dust. It is doubtful, however, whether such good results can be obtained for such difficult wood as Cuban mahogany curls, which are extremely liable to crack after being laid.

When St. Paul's cathedral was being built by Wren towards the end of the 17th century, some old British graves were discovered, and in them were a number of pins about 6 ins. long, some of ivory and some of wood (seemingly box). Apparently the bodies were wrapped in woollen shrouds which had disintegrated, leaving the pins intact. It is of interest chiefly in exemplifying the lasting quality of boxwood, since the pins had probably lain undisturbed for well over a 1,000 years.

* * *

Our practical department, who have recently been experimenting with various glues, send the following report :

". . . Amongst the glues suitable for the home workshop we name *Duroglue*. It compares favourably with other glues in its class in point of strength, and is non-staining. One special advantage is that it is used cold, no preparation being necessary. In the coldest weather it is liable to congeal, but mild warming restores it. At normal workshop temperature it has the correct working consistency.

The gluing technique is the same as that for Scotch glue, except that, being used cold, no preliminary heating of the joint is necessary, and there is not the same necessity for speed. Toothing of the joining surfaces is desirable. For rubbed joints we advise slight warming of the glue (standing the jar in warm water). This makes the glue less viscous, so enabling the glue to enter the grain more thoroughly, and causing the surplus to be squeezed out more easily. For other joints pressure from a cramp is desirable. This should be maintained for about an hour in normal circumstances, but if the joint tends to spring, should not be removed under twelve hours.

When putting together an extra large piece of work you can always fix two cramps together with bolts, the screws at both ends can then be tightened at the same time,

The QUESTION BOX

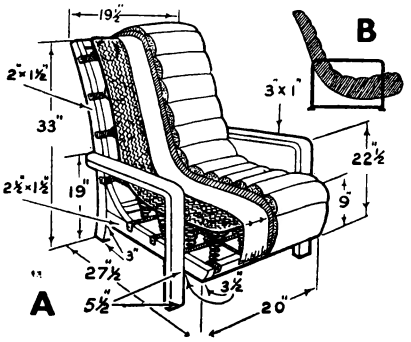
REGULATIONS.—These columns are for the benefit of readers who find themselves faced with some practical difficulty. Full particulars should be clearly stated, and if possible a rough sketch enclosed. As, too, the Editor may require further information, a stamped addressed envelope should be sent. Replies to queries of general interest will be given in these pages. Readers will understand that we cannot, of course, prepare special designs for individual requirements. With each query must be enclosed a Coupon, see foot of page iv of cover. Queries, with name and full address of sender, should be addressed to: The Editor, "The Woodworker," Montague House, Russell Square, W.C.1

Upholstering a Hammock Chair

UPHOLSTERING A HAMMOCK CHAIR **A.S.G. (Kenton) is making the hammock chair given on page 64, March, 1940, *Woodworker*. He is following design B and asks advice.**

Reply.—The design B is upholstered in the same way as shown for design A. Make up the arms as separate units, likewise the seat and back framing, joining together afterwards with two ¼ or ⅜ in. bolts at each point where the seat and back meets the arms. If the arm rails are cut in about ¼ in. to receive the seat and back rails it will make a stronger job. Countersink for the heads of the bolts in the arms, filling in with dowels later.

The pre-war method of springing was to use a patent sprung unit made to fit the job. This consisted of three steel laths running the length of the seat and back and about eight crossing at equal distances widthways. A 5-inch coil spring was either riveted or clipped at each crossing point of the laths. The whole unit was fixed to the seat and back framing by nailing through holes drilled in the ends of the laths. Next came the upholstering, which was



CUT-AWAY VIEW OF THE CHAIR

carried out after the springing was fixed.

It is very doubtful whether a spring unit can be obtained at the present time, in fact all upholstery springs are difficult to obtain. An alternative method would be to web the seat and back on the underside of the rails. Space out nine 7 or 8 in. by 9 gauge springs in the seat and 9 6 in. by 12 gauge in the back. Sew these to the webbing with three ties to each spring. Lace the tops in place with a stout twine or cord, then cover with hessian. Tack this on to the top of the rails. It will be easier to make the back and seat separate at this stage by tacking both the seat and back hessians on to the stretcher rail in the centre of the back and seat framing. Sew the top coils of the springs to the hessian, again three ties each, afterwards proceeding with the stuffing. Fill up all round the edges to the level of the centre springs with fibre, next filling in the centre with a light layer of either fibre or wool. Cover the whole with scrim, taking this on to the edges of the rails. Make a series of ties through the centre of both seat and back to hold the stuffing in place. Next stitch a roll or edge on each side and across the front. Two stitches along the sides, three across the front of the seat and one across the top of the back will be sufficient.

A thin top stuffing of hair, fibre or wool is next laid over the scrim to form an even surface.

The covering can now be carried out as described in the March number. Carefully done, this hand sprung method will make as good a finish as with a sprung unit and wear equally as well, but will not be quite so soft. (193)

TONING MAHOGANY **C.J.W. (Tottenham). I wish to polish a mahogany bureau. I have tried dark mahogany oil stain, followed by red polish, but the result is too scarlet. I want a deeper damson or damask colour.**

Reply.—In staining your bureau you have taken the wrong course by using oil stain on mahogany, and this will have to be removed before you can work to the desired colour. Scrape off all the polish and as much of the oil stain as possible. Rub down the whole surface with No. 0 glasspaper. When you are satisfied that the job is clean, make up the following stain. Boil ¼ lb. bichromate of potash and 2 ozs. vandyke crystals in 2 quarts of water. Apply this stain freely over the whole surface and let it soak well into the wood. When you are sure that all parts of the bureau are thoroughly stained, wipe off with a soft rag. Leave for about twenty-four hours to dry. Smooth down with No. 0 glasspaper and fill in the grain with mahogany oil filler. Wipe off with canvas or coarse rag and leave for about twelve hours to dry. Next obtain some brown spirit polish and add to this a little Bismarck brown if necessary. Strain this through a piece of rag to prevent any grit from getting into the polish. Brush over the whole surface with this polish and you should obtain a good plum or damask colour as required. (146)

ACCUMULATOR CHARGING **R.P. (Porthill) asks whether it is practicable to drive a 6-volt car dynamo from a treadle lathe. He uses the lathe considerably during the day and uses a 6-volt accumulator to produce light for evening work.**

Reply.—Your proposal is, in our opinion, impracticable. The speed at which car dynamos must be run in order to give full output varies according to the makers, and the slowest speed is about 800 revs. per minute. Now the treadle speed of a lathe may be taken, roughly, as being 80 treads per minute, when work is being done, and it would be possible to get a 10 to 1 ratio for the dynamo drive which would give 800 r.p.m.; but as the dynamo builds up, additional effort would be required which would make the operation of the lathe, over a lengthy period, very laborious.

As you actually have a car dynamo we would suggest trying it out with a drive from your lathe, that is if it is of the belt driven type. In order to charge your accumulator, the voltage of the dynamo should be greater than that of the accumulator. This could be ascertained by connecting a voltmeter across the terminals whilst running with the accumulator in circuit. Care must be taken to see that the positive lead from the dynamo is connected to the positive pole of the accumulator, the negative lead being correspondingly connected.

If you find that the output from the dynamo is satisfactory, all that need be done is to insert a switch in the charging circuit in order to cut out the dynamo when charging ceases, otherwise the accumulator will discharge through the dynamo. (175)

ROYAL SALOP INFIRMARY, SHREWSBURY

WANTED.—General Joiner (Universal Woodworker) suitable for maintenance Carpenter's Shop of a General Hospital. Write giving specification and statement of condition and quoting price required to the Secretary-Superintendent.

SALE AND EXCHANGE (1½d. per word)

Over 1,000 Formulas for the handyman, woodworker, metalworker and others in our new book. Price 3/3, postage paid.—W. O. ASHDOWN, 164 Woodward Road, Dagenham.

For Sale.—Upholstery materials. Send stamped and addressed envelope for patterns and prices.—BARBERS, 327, Cleethorpe Road, Grimsby.

Wood Pullalong Toys.—Easily made from scrap wood. Complete set of 12 patterns and instructions, 5/6 post paid. Include Dog, Duck, Elephant, Emu, Horse, Gazelle, etc.—FUDGE (W.), 72, Parrys Lane, Bristol, 9.

Handicraft Teaching.—Craftsmen, Wood or Metal, prepared for examinations by correspondence coaching. Special terms for men in the fighting services. Government grant available.—MARRIOTT'S, 10c, Grange Road, Chester.

Mark Your Tools.—Apology. Messrs. EYRE & BAXTER, 55, Brown Street, Sheffield, regret delay in executing orders for name stamps owing to pressure of Government contracts. Future orders will take at least 13 weeks to execute.

Inlay Bandings.—Lines and Strings in various sizes and patterns.—Below.

Veneers are essential to perfect modern designs. Any quality veneer supplied. Stamp for list.—J. C. LIPPIATT, 2, Avenue Road, Brentford.

French Polishing.—Thoroughly practical tuition by post in all processes. See our list of pupils placed in well-paid positions.—BAKES, 15, Jesmond Avenue, Bradford.

Toy Wheels (wood), 3 ins. to 6 ins. diam. only. S.A.E. brings price list and particulars.—GREER, 931, Argyle Street, Glasgow, C.3.

Upholsterer's Materials.—We can only supply our regular customers until further notice, owing to shortage of supplies.—HARBETT'S WHOLESALE WAREHOUSE, 98 Falkland Road, London, N.8.

Lathes.—Well tested, simplified diagrams (6) and clear instructions for any Handyman to construct a satisfactory TOY or MODEL MAKER'S LATHE from easily obtainable materials costing approximately 40/-. No castings or machining needed. Price 3/6.—W. BARHAM, "Hilltop," Bradmore Green, Coulsdon, Surrey.

Galleons.—A handsome "Planbook," "Building a Galleon," embraces full instructions for making models of many of these grand old ships. Profusely illustrated. Contains set of eight progress-plans, size 20 ins. by 30 ins.—Below.

Yacht.—How to build a fast-sailing racing model by new and rapid method at cost of only few shillings. Fully illustrated: full description, working drawings, scale plans and licence to build.—Below.

Gas Engine.—Perfect working model which runs on air can be made of simple materials to be found in every home. New model-making technique is fully illustrated and described.—Below.

Airplanes, Ships and "OO" Railways.—Send 3d. and unstamped addressed envelope for particulars of above "Planbooks" and ask for new list of over 100 Plans, including many new ones; to be published mid-month. —MODELCRAFT, LTD., 77 (W.W.) Grosvenor Road, London, S.W.1.

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